Program Executive Office
Command, Control, Communications, Computers, Intelligence and Space Systems (PEO C4I and Space Systems)

Battlespace Awareness and Information Operations Program Office (PMW 120)

PMW 120 Overview
2020 NDIA Fall Forum

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Deliver threat-based C4I and space capabilities to enable the fleet to compete, deter and win – tonight

Battlespace Awareness and Information Operations

VISION

Provide quality Information Warfare capabilities to the Warfighter for a decisive operational advantage

Deliver assured intelligence, meteorology, oceanography, and information operations data, products, and services that provide Information Warfare capabilities to the Fleet

MISSION

IO | Information Operations

ISR | Intelligence, Surveillance, & Reconnaissance

METOC | Meteorology & Oceanography

PMW 120 Acquisition Programs

Information Operations (IO)

IO tactical cryptologic capabilities fuse and exploit Radio Frequency (RF) signals intelligence at sea, enabling Electromagnetic Maneuver Warfare (EMW) and Electronic Attack to protect the ships' force

- CCOP (SPCD, SFE, DRT, Legacy)
- Classic Reach
- ICADS
- SSEE Increment E
- SSEE Increment F
- SSEE Modifications
- Spectral
- RTSO

Intelligence, Surveillance, & Reconnaissance (ISR)

ISR capabilities support data sharing and connect Naval operational sensors and platforms to Intelligence Community, Joint, and Naval Enterprises. Expanded surveillance enables ballistic missile defense, enhances maritime safety, and improves the Fleet's ability to understand and predict adversary actions

- DCGS-N Increment 1
- DCGS-N Increment 2
- AIS
- ICOP
- ICOP SRF
- MIBS (JTT)
- MDA

Meteorology & Oceanography (METOC)

METOC capabilities measure, sense, assess, and exploit the current and predicted states of the physical environment to produce relevant operational information for Warfighters

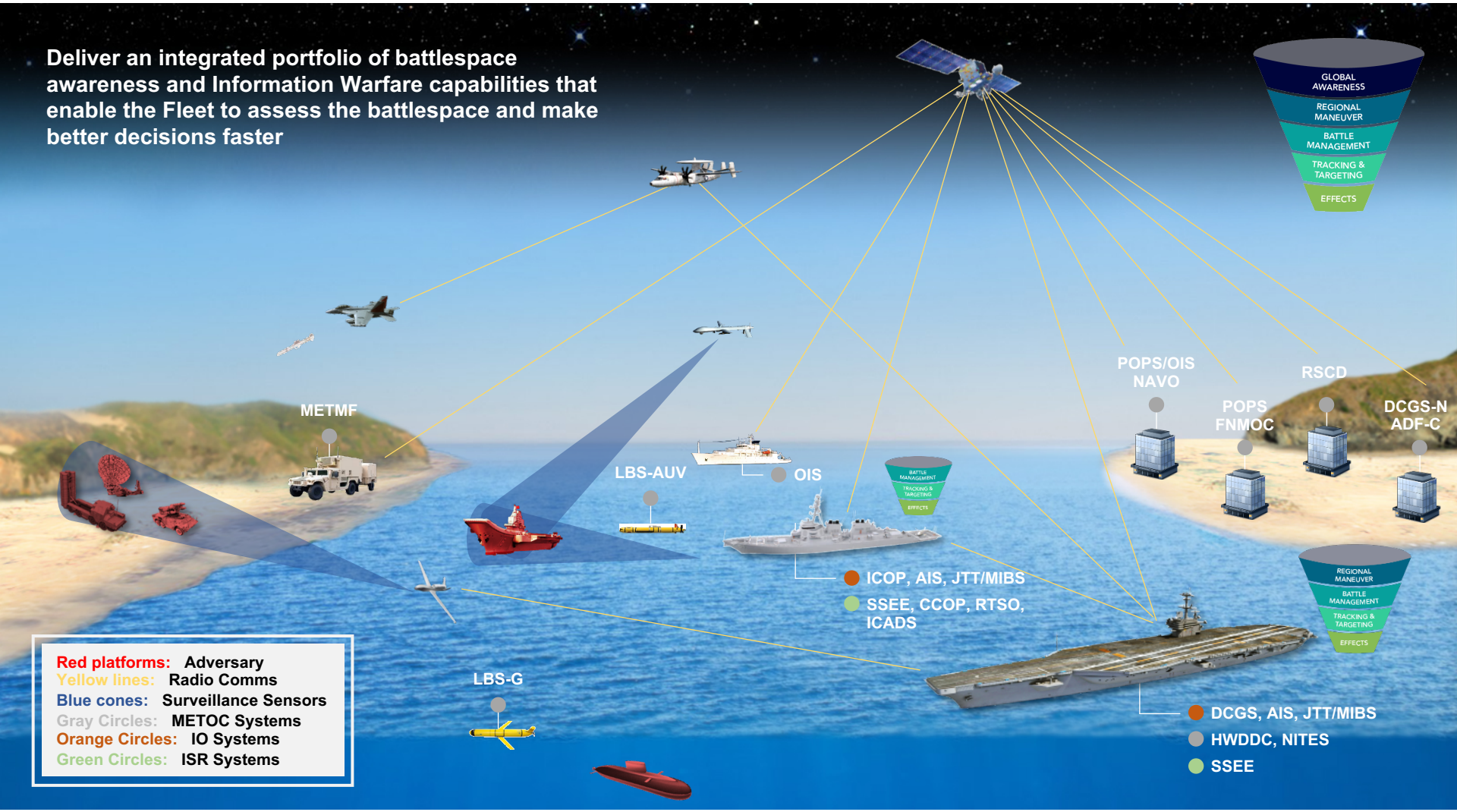
- HWDDC
- LBS UUV
- NITES-Next
- METMF(R) NEXGEN
- METMF SMT
- RSCD
- POPS
- OIS

PMW 120 Overview

Deliver assured intelligence, meteorology, oceanography, and information operations data, products, and services that provide Information Warfare capabilities to the Fleet.

Information Operation (IO)	Provide timely, relevant, and integrated National and Tactical Radio Frequency signals intelligence information and services enabling EMW and Electronic Attack to protect Fleet forces ***CCOP, Classic Reach, ICADS, RTSO, Spectral, SSEE, NTDN***	
Intelligence, Surveillance, and Reconnaissance (ISR)	Inform EMW by supporting data sharing and connecting Naval operational sensors and platforms to Naval, Joint, and Intelligence Community Enterprises ***DCGS-N, AIS, ICOP, MIBS/JTT, TET***	
Meteorology & Oceanography (METOC)	Measure, sense, assess, and exploit the current and predicted states of the physical environment to produce relevant operational information for informing EMW and the strategic Triad's SSBNs ***HWDDC, LBS-UUV, METMF (R) NEXGEN, NITES-Next, OIS, POPS, RSCD***	
Electromagnetic Maneuver Warfare (EMW) and Integrated Fires (IF)	EMW and IF capabilities integrate real-time counter C4ISR and targeting (C-C4ISR-T) and intelligence into combat and weapons systems to leverage non-kinetic force and enable more effective over the horizon targeting for kinetic warfare	

PMW 120 Operational View



Agile – Integrated – Vital - Fleet Focused

IO Capabilities

Material Solution Analysis	A	Technology Maturation & Risk Reduction	B	Engineering & Manufacturing Development	C	Production & Deployment	Operations & Support
Pre-Systems Acquisition				Systems Acquisition			Sustainment

Spectral

- Next generation Information Warfare weapons system enhances signals exploitation capabilities
- Detects, classifies, and tracks Signals of Interest (SOI) beyond current requirements to improve automation, operability, and intuitiveness in TCPED process
- Scalable, mission-configurable, modular (plug & play), remotable; supports new threats/ capabilities
- Enables cross-system data sharing to support EMW/IF

Real Time Spectrum Operations (RTSO)

- Senses, controls, and plans the use of electromagnetic spectrum
- Notify operators of spectrum issues

Cryptologic Carry On Program (CCOP)

- Prosecutes SOI to deliver real-time situational awareness of key threats and geo-location on high-priority targets
- Quick-reaction capability addresses advancements in foreign military comms and ISR systems; provides non-permanent capability to platforms not equipped with permanent IO warfare systems, or augments permanent equipment
- Ingests and correlates off-board and organic intelligence data; disseminates multi-intelligence products to provide valuable, actionable intelligence

Ship's Signal Exploitation Equipment (SSEE) Modifications

- Enhances SSEE Increment F capabilities to detect and track radio signals
- Advanced antennas increase frequency coverage to improve threat signal acquisition

Ship's Signal Exploitation Equipment (SSEE) Increment F

- Broadens signals intelligence collection
- Standardized IO weapon system across multiple maritime platforms based upon a common core capability: responds to emerging threats, promotes flexible asset tasking, supports cross-training personnel
- Small footprint variant enables mission-specific configuration and rapid deployment of new technology

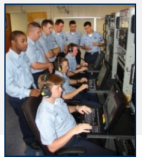
Sailor provides routine maintenance to the AS-4623 IO Antenna

Classic Reach

- Virtualized capability enables distributed multi-intelligence operations for the Warfighter
- Provides the Navy with an integrated, distributed net-centric grid framework
- Remote operations allow ashore support to rapidly provide threat I&W

Ship's Signal Exploitation Equipment (SSEE) Increment E

- Highly-sensitive electronic support measure (ESM) system that provides automated signal acquisition, direction finding, and target ID and geolocation
- Delivers threat indications and warnings (I&W) for ship/strike groups; feeds data to National consumers
- Last Increment E system in Fleet retires in 2022



Sailors learn the SSEE Inc E ESM system

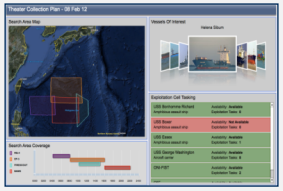
ISR Capabilities

Material Solution Analysis	A	Technology Maturation & Risk Reduction	B	Engineering & Manufacturing Development	C	Production & Deployment	Operations & Support
Pre-Systems Acquisition				Systems Acquisition			Sustainment

Distributed Common Ground System – Navy (DCGS-N) Increment 2

- Robust cross-domain data fusion with automated analytics and workflows improve threat detection
- Bridges Naval operational sensors with IC/Joint/Naval Enterprises
- Expedites the Tasking, Collections, Processing, Exploitation, and Dissemination (TCPED) process

Maritime Patterns of Life (Big Data)



Automated Workflows and Analytics

Intelligence Carry On Program (ICOP)

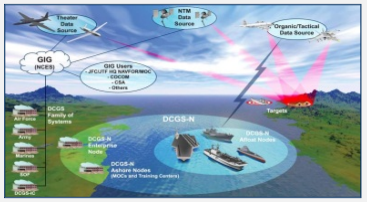
- Extends ISR Enterprise and DCGS-N FoS capabilities to unit-level forces and the Joint IC
- Portable workstation receives, processes, exploits, and disseminates multi-intelligence data from airborne and organic sensors; integrates a 3-D ISR picture of the battlespace
- Provides data to Joint IC without burdening limited bandwidth information systems
- Responds to multiple Fleet requirements (C5F/C3F UONs)

Robust, portable intelligence system

Enhances Warfighter's Common Operational Picture

Distributed Common Ground System – Navy (DCGS-N) Increment 1

- Consolidates geospatial, human, imagery, & signals intelligence analytical tools and broader FoS intelligence products into a single, integrated display
- Web-enabled common intelligence picture facilitates analysis and exploitation
- The Analyst Workshop is a full-service framework that enables rapid, comprehensive intelligence support across full-spectrum military operations



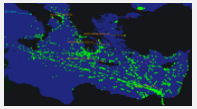
Joint Tactical Terminal – Maritime (JTT-M)

- Provides surface platforms with over-the-air, near-real-time lethal threat intelligence
- Integrated broadcast terminals transmit National & theater data, enabling units to collect intelligence, specifically indications and warnings of high-priority events
- Ship commanders have accurate and timely situational awareness

JTT-SR integrated into AN/USQ-151

Automatic Identification System (AIS)

- Collects and fuses open source data broadcast from commercial shipping vessels with ISR data
- Supports navigation safety and maritime security
- Provides over-the-horizon views



Improved Vessel Tracking

Maritime Domain Awareness (MDA)

- Provides the National All Source Fused Track Service (NAFTS), The authoritative national maritime track picture
- NAFTS is the first step in the Over-The-Horizon Targeting (OTHT) workflow
- Comprises multiple capabilities in multiple information domains for government, and foreign partner information sharing

METOC Capabilities

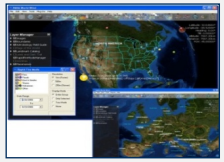
Material Solution Analysis	A	Technology Maturation & Risk Reduction	B	Engineering & Manufacturing Development	C	Production & Deployment	Operations & Support
Pre-Systems Acquisition				Systems Acquisition			Sustainment

Remote Sensing Capability Development (RSCD)

- Enhanced remote sensing capability discriminates oceanographic phenomenon from the natural environment
- Automated tools increase coverage area, reduce timeline, decrease analyst workload

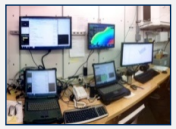
Naval Integrated Tactical Environmental System-Next Generation (NITES-Next)

- Fuses environmental data to determine the effect on a platform's weapons systems ability to conduct missions
- Tools and tactical decision aids that on-site meteorologists use to develop forecasts and predict impact to electromagnetic-spectrum propagation
- Executes agile software development to ensure flexibility in meeting emergent requirements and addressing Fleet user priorities



Littoral Battlespace Sensing–Unmanned Undersea Vehicle (LBS-UUV)

- Enables undersea dominance in support of anti-submarine warfare, mine countermeasures, special operations
- **LBS-Glider** senses ocean and thermal light transmission properties critical to weapon and sensor performance, planning, execution
- **LBS-Autonomous Undersea Vehicle** collects bathymetric & bottom imagery to provide battlespace awareness of the undersea environment

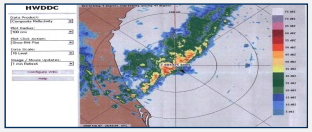


Primary Ocean Prediction System (POPS)

- Supercomputer fuses worldwide METOC data to feed weather prediction models
- IT infrastructure provides environmental prediction across multiple classification enclaves for Navy geophysical data

Hazardous Weather Detection and Display Capability (HWDDC)

- Extracts and converts data from surveillance radars to generate weather situational awareness and help the Fleet find the optimal conditions to conduct missions



- Off-boards data to FMNOC to influence regional weather prediction models & enhance real-time analysis

Marine Corps Meteorological Mobile Facility (Replacement) Next Generation (METMF(R) NEXGEN)

- HWMMV-mounted mobile weather station helps Warfighters navigate dynamic battlefield conditions
- Collects, processes, and transmits METOC data

Oceanographic Information System (OIS)

- Sustains global oceanographic and hydrographic surveying in support of undersea warfare and navigation safety

Electromagnetic Maneuver Warfare

Operational Vision - Integrated Fires, part of Electromagnetic Maneuver Warfare (EMW)

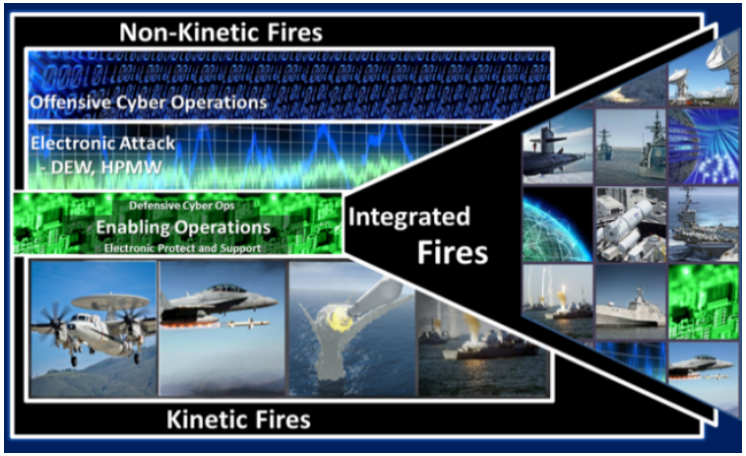
- Integrate kinetic and non-kinetic fires
- High Side Fusion (HSF)
- Combat Systems Integration (CSI)
- Battle Management Aids (BMA)
- Fully integrating National Technical Means (NTM), organic sensors and weapon systems information

Enabled By Key Technologies

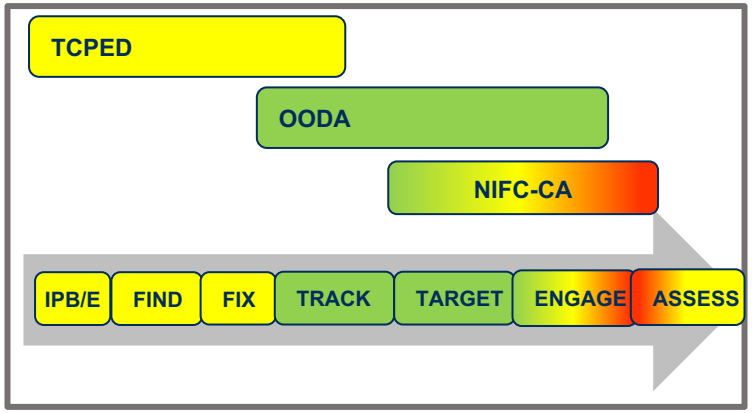
- Integrate systems across PMW 120 portfolio
- Homogenize user interfaces – "Microsoft Ribbon"
- Data framework (analytic, ingest, data tagging)
- Robust Cross Domain Solution

Direct Benefit To Fleet/Sailors

- Allow analysts to focus on analysis
- Reduce training time through improved usability
- Provide ability to tailor systems to mission
- Present data to Sailor based on role



Kill Chain



Focus on shortening the kill chain (kinetic and non-kinetic)

Future Capability Development
EMW/IF Alignment

CURRENT STATE: Systems are NOT integrated and interoperable to meet emerging threats

END STATE:

System of Systems interoperability that provides

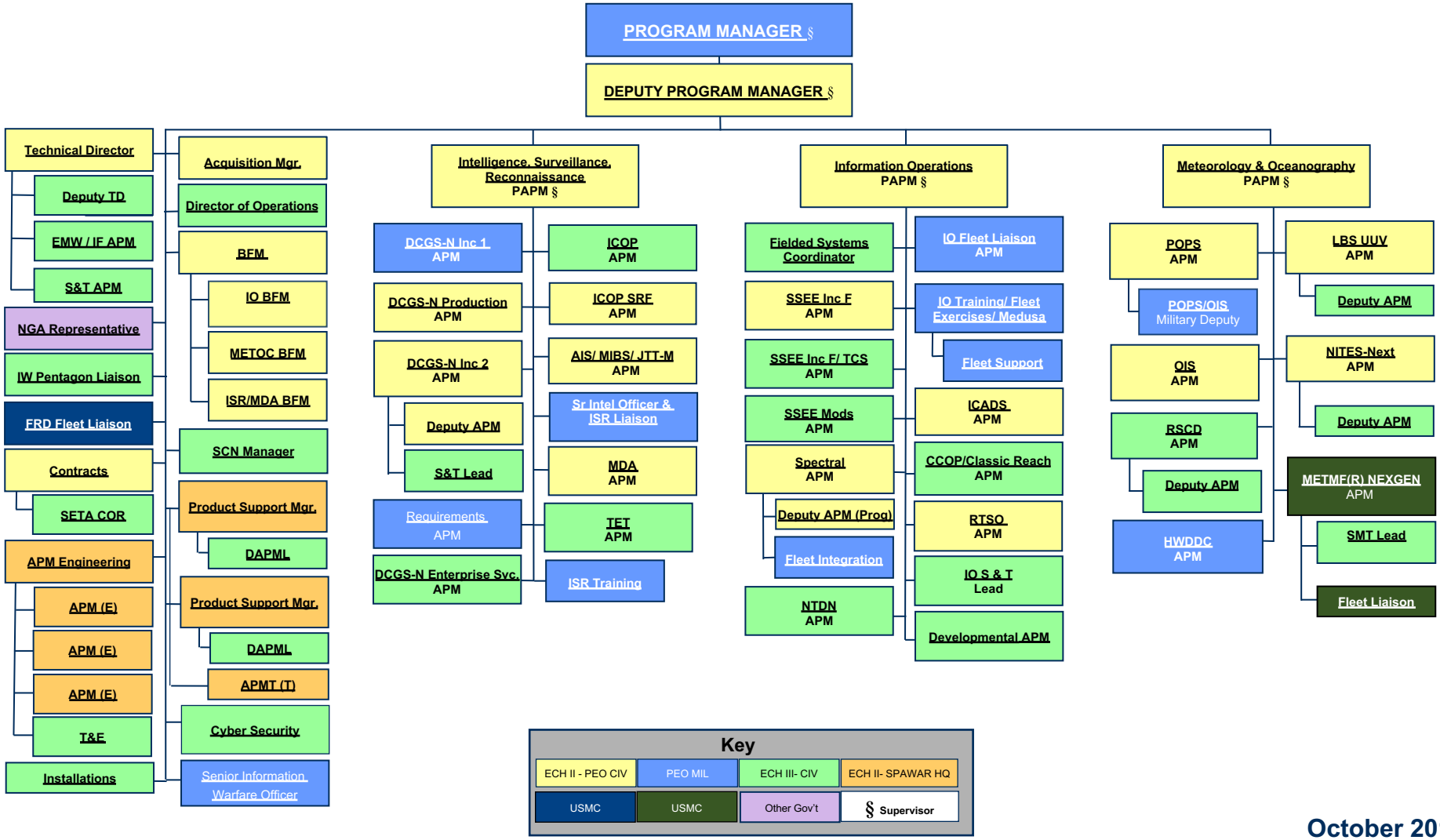
- Accurate combat ID
- Complete Blue Force mission suitability assessments
- Optimal Force synchronization
- Target quality geolocation
- Automated asset allocation recommendations
- Coordinated C2 / C-ISR tools
- Single Integrated Picture (SIP)
- Complete spectrum awareness and control
- Full spectrum cyber operations
- Full spectrum NAVWAR

Phase I	Phase II	Phase III

Phased delivery of new and continuously enhanced capability over time * 120/150 Aligned

• High Side Fusion	• Non-Kinetic Fires	• Int NTM & Tactical Geolocation	• Battle Management Aids
• Increased Automation	• Optimized Maneuver	• Comms in a DDIL Environment	• Combat Systems Integration
• Spectrum Management	• Enhanced OTHT	• NAVWAR	• Automated Assessment and COAs
• Sensor Cross-Cueing	• Counter-ISR&T		
	• HALO COP		

PMW 120 Organizational Chart



October 2019

Accelerated delivery of required capability that is affordable, integrated and interoperable